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Forest Inventory Mapmaker Users Guide

Patrick D. Miles

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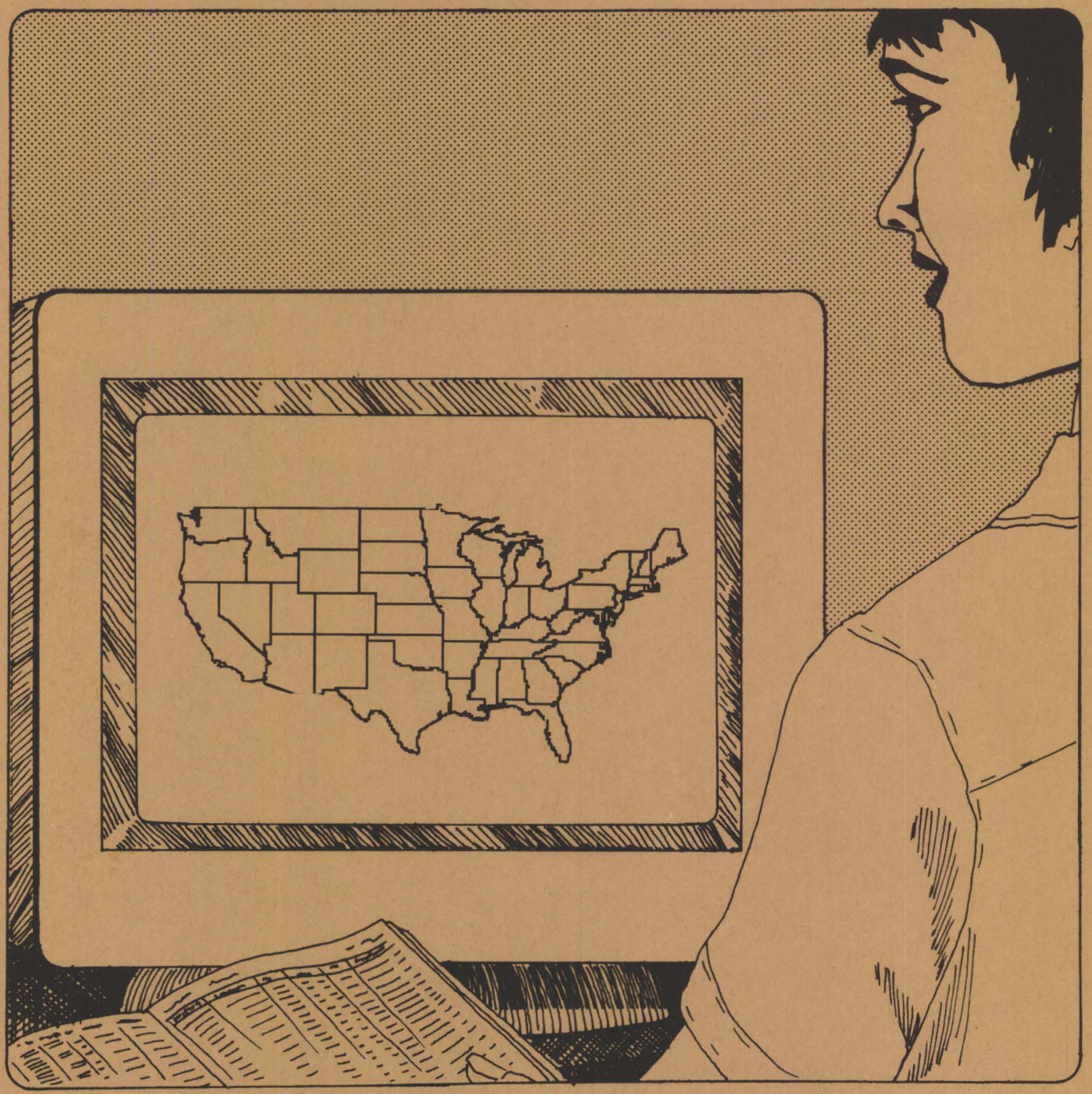

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SYSTEM REQUIREMENTS

The Forest Inventory Mapmaker program is a server-side Web application. The only software required is a browser such as Netscape® or Microsoft Internet Explorer®.

FOREWORD

Forest Inventory and Analysis (FIA) is a continuing endeavor mandated by Congress in the Forest and Rangeland Renewable Resources Planning Act of 1974 and the McSweeney-McNary Forest Research Act of 1928. FIA's primary objective is to determine the extent, condition, volume, growth, and depletions of timber on the Nation's forest land. Before 1999, all inventories were conducted on a periodic basis. With the passage of the 1998 Farm Bill, FIA is now required to collect data on 20 percent of the plots annually within each State. This kind of up-to-date information is essential to frame realistic forest policies and programs. USDA Forest Service regional research stations are responsible for conducting these inventories and publishing summary reports for individual States.

In addition to published reports, the Forest Service can also provide portions of the data collected in each inventory to those interested in further analysis. A standard format called the Forest Inventory and Analysis Database (FIADB) (Miles *et al.* 2001) was developed to provide users with as much data as possible in a consistent manner among States. FIADB files can be obtained for any State inventory conducted after 1988 (Eastern U.S.) or 1994 (Western U.S.). Files for many State inventories conducted before this time may also be available; however, some data fields may be empty or the items may have been collected or computed differently. Inventories begun after 1997 use a common plot design nationwide, resulting in greater consistency among FIA units than earlier inventories.

DISCLAIMER

Mention of trade names does not constitute endorsement by the USDA Forest Service.

Forest Inventory Mapmaker Users Guide

Patrick D. Miles

INTRODUCTION

The goal of this manual is to provide you with an understanding of the basic concepts behind the Forest Inventory Mapmaker program. These concepts are discussed in the body of the manual. Because many people learn best by doing, tutorials are provided to reinforce these concepts. So, if you have access to the Internet, I encourage you to skip to the back of the manual and try the four tutorials before you read the rest of the manual. The Forest Inventory Mapmaker program can be found at the following Web site: http://www.ncrs.fs.fed.us/4801/fiadb/index.htm.

In brief, the Forest Inventory Mapmaker program provides users with the ability to easily generate tables and maps without the need for understanding the underlying data structures. Using a Web browser, you input the following information:

1) geographic area of interest
2) attribute of interest such as timberland area, number of trees
3) optional filters for restricting the query to specific ownership, species, etc.
4) classification variables to be used for pages, columns, rows

From your information, the Web application generates a table of forest statistics and in some cases a shaded map.

What is a Table?

"Table" in this manual refers to a report. Tables are sometimes called matrix reports or cross-tabulations. A two-way table is an arrangement of data set up in columns and rows. If a table has 3 rows and 4 columns, it will have a total of 12 cells (Note: There are three rows and four columns of values in table 1. The values are the numbers in bold text. Column 1 refers to the values for the sawtimber column for this example, and row 1 refers to the values for Aitkin County.) Each cell contains the value for the respective column-row combination. For example, in table 1, the value (number of acres) for the combination of poletimber (column 2) and Becker County (row 3) is 137,000, indicating that there are 137,000 acres of poletimber-size timberland in Becker County.

Table 1.—*Example of two-way table*

		Stand-size		
County	Sawtimber	Poletimber	Seed-sap	Nonstocked
AITKIN	**236,300**	**274,600**	**186,900**	**2,700**
ANOKA	**21,300**	**9,700**	**3,200**	**0**
BECKER	**141,800**	**137,000**	**51,300**	**2,200**

A three-way table has pages in addition to columns and rows. In table 2, a separate two-way table (page) is presented for each ownership group (Other Federal, State and Local, and Private). There are a total of 36 cells (3 pages x 4 columns x 3 rows). If the numbers of acres in column 2, row 3 on each of the 3 pages are summed, the total would be 137,000 acres (11,200 + 41,500 + 84,300).

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Table 2.—*Example of three-way table*

Other Federal				
County	Sawtimber	Poletimber	Seed-sap	Nonstocked
27001 AITKIN	**5,400**	**1,000**	**1,500**	**0**
27003 ANOKA	**0**	**0**	**0**	**0**
27005 BECKER	**11,700**	**11,200**	**2,200**	**1,100**
State and Local				
County	Sawtimber	Poletimber	Seed-sap	Nonstocked
27001 AITKIN	**125,500**	**176,900**	**142,300**	**1,500**
27003 ANOKA	**2,100**	**400**	**1,900**	**0**

(*table 2 continued on next page*)

(table 2 continued)

27005 BECKER	**39,900**	**41,500**	**26,400**	**0**
Private				
County	Sawtimber	Poletimber	Seed-sap	Nonstocked
AITKIN	**105,400**	**96,700**	**43,100**	**1,200**
ANOKA	**19,200**	**9,300**	**1,300**	**0**
BECKER	**90,200**	**84,300**	**22,700**	**1,100**

The Forest Inventory Mapmaker program allows users to generate two-way and three-way tables, such as table 3 below. The row headings of the table contain the Federal Information Processing Standards (FIPS) county code (Bureau of the Census 1989) and county name. The first column provides information on the total acreage in all stand-size classes and the second through fifth columns provide information for specific stand-size classes. The column headings contain the various stand-size class names. The first row contains information about Aitkin County (27001 is the FIPS code for Aitkin County). The last row contains information for the stand-size class totals.

What is a Shaded County Map?

The Forest Inventory Mapmaker program can produce shaded county and shaded congressional district maps. A shaded county map is a geographical depiction of a single attribute for every county. The attribute is generally grouped into ranges, which, when mapped, appear as different colors.

The mapping attribute can be in units such as acres, cubic foot volume, or number of live trees for each county. The attribute can also be expressed as a ratio such as volume/acre of timberland, proportion of area in timberland (acres of timberland/acres of all land, or cubic-foot growth/cubic-foot removals (growth to removals ratios)).

Table 3.—*Two-way table generated by Forest Inventory Mapmaker program*

Two-way table (rows and columns)					
	Total Stand-size class	Large diameter	Medium diameter	Small diameter	Nonstocked
27001 AITKIN	700,500	236,300	274,600	186,900	2,700
27003 ANOKA	34,200	21,300	9,700	3,200	0
27005 BECKER	332,300	141,800	137,000	51,300	2,200
Total County code	1,067,000	399,400	421,300	241,400	4,900

The Forest Inventory Mapmaker program takes the total column from a two- or three-way table and uses this information to generate a shaded county map. The map below (fig. 1) was generated using the Forest Inventory Mapmaker program. The program's filtering option (chapter 6) was used to retrieve only sawtimber-size stands. Therefore, the total column contains only the acreage for sawtimber-size stands. Through careful use of filtering, you can generate a map for a variety of subsets of the data.

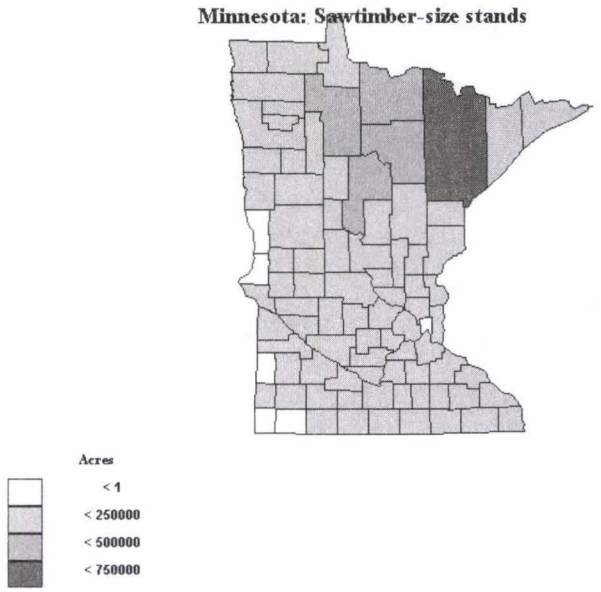


Figure 1.—*Acres of sawtimber-size stands by county for Minnesota, 1990.*

Figure 2 shows the proportion of land in sawtimber-size stands for each county. Multiplying the proportions by 100 will yield the percent of all land in sawtimber-size stands by county. In figure 1, we see that St. Louis County is the biggest county in Minnesota and has between 500,000 and 750,000 acres of sawtimber-size stands. But in figure 2, we see that many other counties have a higher percentage of land in sawtimber-size stands than St. Louis County.

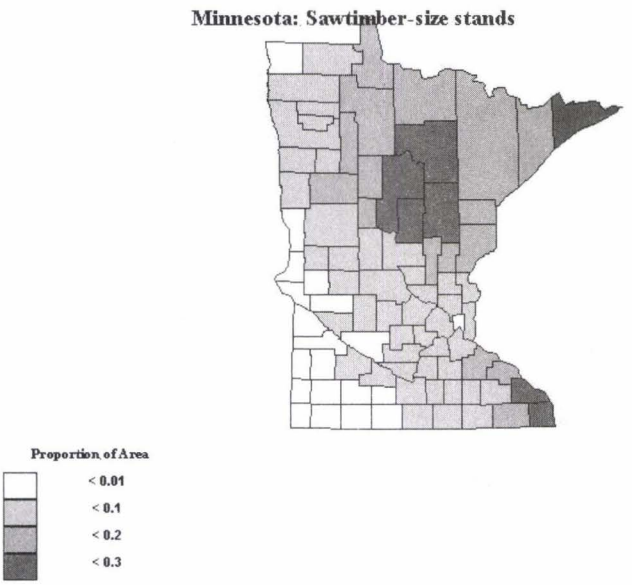


Figure 2.—*Proportion of land in sawtimber-size stands by county, Minnesota, 1990.*

Starting the Forest Inventory Mapmaker

To start the Forest Inventory Mapmaker program, type www.ncrs.fs.fed.us/4801/fiadb/index.htm on the address line of your browser. Then click on the link to "Run Forest Inventory Mapmaker program." It may take up to a minute to bring up the next page as the program queries the database to determine what data are available.

CHAPTER 1

SPECIFYING A GEOGRAPHIC AREA OF INTEREST

Once the Forest Inventory Mapmaker has been started, the first of several forms will appear. The first form allows the user to specify the geographic area of interest (appendix A – Geographic Area of Interest Form).

The SessionID number on the top of these forms is a unique number that helps to maintain the state of the Web page. The Forest Inventory Mapmaker program is a server-side Web application, and the server may be handling forms from several users at a time. The SessionID allows the server to differentiate between users and to retain information from multiple forms for each session.

Two types of retrievals can be performed: a "State/County" retrieval or a "Circle" retrieval. Two radio buttons on the top of this form allow you to choose between types of retrievals. A "State/County" retrieval allows you to report forest statistics for one or more States and/or one or more counties. A "Circle" retrieval allows you to report forest statistics for a circular area centered at a specific latitude and longitude (in decimal degrees) with a radius of a specified length (in miles). Plot locations are plotted on the map when a circular retrieval is run. To view all plot locations for a State, you could perform a circular retrieval where the circle extends well beyond the borders of the State. You could, for example, specify a latitude and longitude that is approximately at the center of the State and a radius of 1,000 miles. This circle would clearly encompass the entire State. You could then use the zoom-in feature, when you are viewing the map, until the State is centered on the page.

The link to the "U.S. Census Bureau Gazetteer" can be used to find the latitude and longitude in decimal degrees for a specific town or city.

Regardless of whether you've elected to perform a "State/County" retrieval or "Circle" retrieval, you must specify which inventories are to be used. Data are currently available for the 48 contiguous States and, in some cases, for multiple inventories. For example, data are available for both the 1997 and 1989 inventories of Georgia. For each State, you must specify the inventory year and choose "No Selection," "All Counties," or "Specific Counties." The default value is "No Selection."

"No Selection" means that the user does not want to include any data for this State.

"All Counties" means that the user would like to include data for all the counties in this State. If you select "All Counties," do not highlight any of the county names.

"Specific Counties" means that the user is going to include data for some but not all of the counties in this State. If "Specific Counties" is selected, the user must highlight the counties of interest. In most browsers you can select a county by holding down the control key (CTRL) while left clicking on the county name with the mouse. Deselect a county by holding down the control key and left clicking on the county name.

Once you've selected the State(s) and/or counties, left click on the "Continue" command button to proceed to the next form (Attribute of Interest). The command button "I already have the data and want to create a map" will be addressed in chapter 9 – Generating a Map from Your Own Data Files.

CHAPTER 2

SPECIFYING THE ATTRIBUTE OF INTEREST

The attribute of interest is what will be reported in the cells of the table. Examples include area of timberland in acres and volume of growing stock on timberland in cubic feet. The algorithms for calculating these attributes are documented in chapter 4 of *The Forest Inventory and Analysis Database: Database Description and Users Manual Version 1.0,* which is available on the Internet at http://www.ncrs.fs.fed.us/4801/fiadb/index.htm under FIADB Documentation. The attribute of interest is selected on the Attribute of Interest Form (appendix B). Users can select from 22 possible attributes of interest by left clicking on it with the mouse (table 4). If the "25 standard tables" option is selected, a standard group of tables will be produced. However, the "25 standard tables" option will not allow you to specify page, column, and row variables nor will it allow you to create a map.

If you select one of the other options, you will be able to customize the table on the Page, Row, and Column of Interest Form (appendix C); if you select "County Code" or "Congressional District" as the row variables on this form, you will be able to generate a shaded county or congressional district map.

The "Would you like to add an optional filter?" radio button allows the user to restrict the data used in the retrieval. If you click on the "Yes" radio button and "Continue," the Filtering Option for Attribute of Interest Form (appendix F) will appear, and if you click on the "No" button and "Continue" the Page, Row, and Column of Interest Form will appear. The Filtering Option for Attribute of Interest Form will be discussed in chapter 6 – Filtering Options.

Table 4.—*Attributes of interest*

25 standard tables
Area of land (area)
Area of forestland (area)
Area of timberland (area)
All live number of trees (trees)
Growing stock number of trees on timberland (trees)
Rough number of trees on timberland (trees)
Rotten number of trees on timberland (trees)
Volume of all live on timberland (volume)
Volume of growing stock on timberland (volume)
Volume of rough on timberland (volume)
Volume of rotten on timberland (volume)
Volume of saw log portion on timberland (volume)
Volume of sawtimber on timberland (bdft)
Net growth of growing stock on timberland (volume)
Mortality of growing stock on timberland (volume)
Removals of growing stock on timberland (volume)
Net growth of sawtimber on timberland (bdft)
Mortality of sawtimber on timberland (bdft)
Removals of sawtimber on timberland (bdft)
All live biomass on timberland (oven-dry lbs)
All live merchantable biomass on timberland (oven-dry lbs)

CHAPTER 3

SPECIFYING THE PAGE, ROW, AND COLUMN CLASSIFICATION VARIABLES

The Page, Row, and Column of Interest Form (appendix C) allows the user to specify which classification variables should be used for pages, rows, and columns. In table 3 "Stand-size class" was the column classification variable and "County code" was the row classification variable. Since table 3 is a two-way table, "None" must have been chosen as the page classification variable.

Table 5 contains a list of the classification variables that are currently available for retrievals where the attribute of interest is area. If the retrieval is for numbers of trees, volumes of trees, or tree biomass, the list of classification variables will also include variables that are based on tree characteristics (table 6). The list of classification variables is expanding as new variables and new ways of classifying variables are added. Continuous variables such as "Current diameter" can be grouped into 1-inch diameter classes, 2-inch diameter classes, or even just as big, medium, and small. A list of the classification variables is available on the Web at www.ncrs.fs.fed.us/4801/fiadb/fim_documentation/fim_documentation.htm.

Table 5.—*Classification variables available for area retrievals*

None (can only be used as a Page classification variable)	Past nonforest or inaccessible land use
All live stocking	Physiographic class
Aspect	Present nonforest land use
Condition number	Private owner industrial status
Condition proportion	Reserved status class
Congressional District	Site index
County code	Site productivity class
Disturbance 1	Slope
Disturbance 2	Stand age
Disturbance 3	Stand origin
Forest Service Region	Stand treatment 1
Forest type	Stand treatment 2
Growing-stock stocking	Stand treatment 3
Land class	Stand-size class
Ownership class	Treatment opportunity class
Ownership group class	

Table 6.—*Additional classification variables that can be selected when tree-level statistics such as volumes or numbers of trees are derived*

Azimuth	Dead tree decay
Crown class	Height
Crown ratio	Horizontal distance
Current diameter	Lean angle
Damage location 1	Major species group
Damage location 2	Net cubic foot volume
Damage location 3	Rotten and missing cull
Damage severity 1	Species
Damage severity 2	Species group
Damage severity 3	Tree class
Damage type 1	Tree grade
Damage type 2	Tree status
Damage type 3	Utilization class
Damaging agent	

Three sets of radio buttons appear at the bottom of the Page, Row, and Column of Interest Form:

Would you like to eliminate empty pages?
Would you like to eliminate empty rows?
Would you like to eliminate empty columns?

In creating table 3, for example, the "Yes" radio button for "Would you like to eliminate empty columns?" was selected. The "Stand-size class" variable has seven categories (Large diameter, Medium diameter, Small diameter, Chaparral, Nonstocked, Not collected, and Other). Selecting the "Yes" radio button eliminated those columns for which there were no data (Chaparral, Not collected, and Other).

Sometimes it is useful to have empty pages, rows, and columns, especially when multiple retrievals have been run and the results are being evaluated in a spreadsheet. In this case it may be important for the rows and columns to line up.

CHAPTER 4

INTERNET ADDRESS OF YOUR RETRIEVAL'S OUTPUT

Most retrievals will be completed in minutes, if not seconds. If a retrieval takes more than 5 minutes, your browser may time out. Even if your browser has timed out, the retrieval may continue to run on the server. The Internet Address of Your Retrieval's Output Form (appendix D) tells you where to find the output files should your browser time out. The table generated by the retrieval can be viewed at a later time by typing the following information on the browser address line: http://www.ncrs.fs.fed.us/4801/fiadb/temp2/jdhhmmss31.htm. The d in dhhmmss is the last digit of the day of the month (for example, if the day of the month is 5, 15, or 25, then the value of d will be 5), hh is the hour, mm is the minute, and ss is the second.

If you choose "County code" or "Congressional District" as the row variable, you will also be able to generate a map based on the completed retrieval by typing:
http://www.ncrs.fs.fed.us/scripts/esrimap.dll?name=forest_inventory_mapmaker&cmd=map&datestamp=jxddhhmm&
on the browser address line.

Generally you can ignore this form. If, however, you run a multi-State retrieval of tree-level data, it would be wise to copy this information in case your browser does time out.

CHAPTER 5

RESULTS PAGE

The Results Page Form (appendix E) provides a description of the retrieval you submitted. Check this over carefully to ensure that the correct retrieval has been run.

There will always be a "View table" link on the Results Page Form. You can view the results of the retrieval by clicking on this link. The link would look like this:

"View table: 1. table www.ncrs.fs.fed.us/4801/fiadb/temp2/jdhhmmss31.htm."

The link file is an html file in table format (see table 3). At the bottom of the link file is a link to a comma-delimited file that contains the same information. Some users may find the comma-delimited file easier to load into spreadsheets.

If you had selected "County code" or "Congressional District" for the row classification variable, the Results Page Form would have a "Create Map" command button. Left clicking on this button will start up a mapping program that is described in chapter 7 – Mapping Parameters.

If something other than "County code" or "Congressional District" code is selected for the row classification variable, the following message will appear on the Results Page Form:

> "No map will be produced. To produce a map go back to the previous page and select County code or Congressional District as the row parameter."

If a circular retrieval is performed, a file containing Plot IDs, attribute values expanded to the population, attribute values per plot, latitude, and longitude will be available for viewing and downloading (table 7). The link to this file is labeled "Plot Coordinates: If you open this link to the Plot Coordinates you can save it as a file and then add the file as a table to an ESRI ArcView project." Left clicking on this link will bring up a file that can be pulled into GIS software such as ArcView where other GIS information may be available. For example, if you pulled in all of the plots in Minnesota along with the volume of aspen on each plot, you could integrate it with a transportation layer to determine the quantity of aspen within 20 miles of a major highway.

This feature has been temporarily disabled pending Agency interpretation of the Privacy Act. There is concern that for large land holdings even rounded coordinates may disclose some private information. Using current FIA sampling standards, only 1 out of every 36,000 trees is measured. If a landowner owns 36,000 acres, chances are that only the trees on 1 acre will be measured. The only information in the FIADB identifying landowner information is the ownership class variable, which has values such as corporate, private, and Native American. Until the question—does providing approximate plot locations and information on broad ownership classes for 1 out of every 36,000 acres amount to the disclosure of private information—is resolved, this feature will remain disabled.

Table 7.—*File generated during circular retrieval that can be uploaded into GIS software*

"Plot_number", "Longitude", "Latitude", "Value", "Per_plot_value"
27049002301 ,-92.97 , 44.34 , 1000 , 1
27131001251 ,-93.38 , 44.35 , 800 , 1
27049002431 ,-92.89 , 44.36 , 2100 , 1
27131001581 ,-93.16 , 44.36 , 800 , 1
27131001401 ,-93.23 , 44.36 , 900 , 1
27049001591 ,-92.97 , 44.38 , 1200 , 1

CHAPTER 6

FILTERING OPTIONS

The Forest Inventory Mapmaker program has three different types of filtering options: Plot/Condition, Tree, and User-Defined. These options are all found on the Filtering Option for Attribute of Interest Form (appendix F). Plot/Condition filters are used to limit the data retrieved based on certain land attributes. Tree filters are used to limit the data retrieved based on certain tree attributes. The Plot/Condition filter will always be available for use. The tree filter will only be available for use when the attribute of interest is number of trees, volumes, or biomass. Retrievals using tree filters require the use of the tree records. Because tree records are not accessed when the attribute of interest is in acres, the tree filter cannot be used for area retrievals.

Plot/Condition Filters

There are seven Plot/Condition filters. For each filter, the user may choose either to accept the default (the default does not filter out any data from the retrieval) or to select a filtering option that will exclude all data except those that match the specific requirements. The Plot/Condition filters are 1) Ownership, 2) Stand-age, 3) Slope, 4) Forest type group, 5) Stand origin, 6) Site class, and 7) Physiographic class.

Tree Filters

There are two Tree filters: 1) Species, and 2) Tree diameter. For each filter, the user may choose either to accept the default (the default does not filter out any data from the retrieval) or to select a filtering option that will exclude all data except those that match the specific requirements.

User-Defined Filter

Users who are familiar with the **S**tructured **Q**uery **L**anguage (**SQL** is an ANSI/NCITS language standard for querying and manipulating databases) may want to filter their retrievals by specifying additional SQL where clauses. For example:

> If you want to limit a volume retrieval to red maple, you can use the following where clause: **and t.spcd=316** (where "t." is the alias for the TREE record, "spcd" is the FIADB variable name for tree species code, and "316" is the code number for red maple).
>
> If you want to limit the volume retrieval to red maple on national forest land, you can use the following where clause: **and t.spcd=316 and c.owncd=11** (where "c." is the alias for the COND record, "owncd" is the FIADB variable name for ownership code, and "11" is the code number for national forest).

Of course, the same effect can be achieved by using the condition and tree filters. But suppose you wanted to know how much of the land was fully stocked or overstocked. Although there is no Plot/Condition filter for Growing-stock stocking, you could use the following where clause: **and c.gsstkcd in (1,2)** (where "c." is the alias for the COND record, and "gsstkcd" is the FIADB variable name for growing stock code, and 1 and 2 are the code numbers for overstocked and fully stocked, respectively.

All of the variable names in the database can be found in *The Forest Inventory and Analysis Database: Database Description and Users Manual Version 1.0*. The aliases for the records are "p." for PLOT, "c." for COND, and "t." for TREE.

CHAPTER 7

MAPPING PARAMETERS

If "County Code" or "Congressional District" is selected as the row classification variable, you can choose to create a map. If you click on the "Create Map" command button on the Results Page Form, the Mapping Parameters Form (appendix G) will appear. Seven options are available on the Mapping Parameter Form. You can choose to accept all the defaults and go to the bottom of the Mapping Parameters Form and click on the "Submit Query" command button, or you can choose to change one or more of the parameters.

Parameter 1—Displaying a Legend

The legend helps explain what is being displayed on the map. In the case of shaded county maps, the legend lists the ranges of the colors on the map. In general, the user will want to display a map legend. The Forest Inventory Mapmaker program allows the user to specify where the legend should be placed. The legend can be placed in the upper right, upper left, lower right, or lower left corner of the map. The default setting is to print a legend in the lower left corner of the map.

Parameter 2—Displaying County Names/ Congressional District Names

Users can choose to have county names displayed on their map if they are creating a shaded county map, or they can display congressional district names if they are creating a shaded congressional district map. The size of the names can also be controlled. The default setting is to print the names.

Parameter 3—Projection

The projection used to display the map can be altered if the retrieval was a State/County retrieval. If a circular retrieval was performed, then the map must be displayed in decimal degrees. The default setting for projection is decimal degrees.

Parameter 4—Class Renderer (assigning map colors)

The class renderer allows the user to decide how many range classes to have and where to set the breakpoint between classes. The default is for five range classes of equal size (five equivalent classes). For example, if the maximum value for all counties is 70 and the minimum value for all counties is 20, then the ranges will be 20 to 29, 30 to 39, 40 to 49, 50 to 59, and 60 to 69. In the legend, the ranges will appear as <30, <40, <50, <60, and <70.

The default colors for equivalent classes are white, yellow, light green, green, cyan, light blue, blue, light red, red, and black.

Most often you will want to select the default for the class renderer and generate a map using five equivalent classes. Once an initial map is generated, you can check the minimum and maximum values and then create a more appealing map using the class you've defined. You can choose to have from 2 to 10 classes, set the breakpoint between these classes, and choose from among 10 colors for each class.

Parameter 5—Attribute Units

Sometimes you may want to display the total number of units (acres, cubic feet, number of trees, etc.) in each county. At other times you may want to display the units as a proportion of the total land area in the county (timberland area as a proportion of all land area, or volume/acre on all land, etc.). You may even want to display units as a proportion of the land area on which those units were found (volume/acre on land that had volume). Table 8 describes the different units that are currently available.

Table 8.—*Attribute unit options*

Attribute item to be mapped	**Description**
Units	Total units found in the County in acres, cuft, bdft, etc.
Units per area of all land.	Divide value for each County by total land area in the County. If the values are in acres the mapped result will be a proportion of the total land area (a number from 0 to 1.0. You can multiply by 100 to get percent). If the values are volumes or weights the result will be volume per acre or weight per acre.
Units per acre of land meeting criteria (Not available for area retrieval since the values would all be equal to one.)	Divide value for each County by area of land contributing to the total estimate for the County. For example, if the retrieval had estimated growing-stock volume on timberland, this option would allow you to map cubic feet/acre of timberland with growing-stock volume.

Parameter 6—Map Title

The user can enter a map title, which must be 46 characters or less.

Parameter 7—Zoom-in Factor to be Used During Map Viewing

The zoom-in factor is important when you are trying to center the map on the page for publishing purposes. Generally use a zoom-in factor of 1.25X or 1.1X when trying to center the map on the page. Zoom-in factors of 2X or 3X are better for quick visual inspections.

CHAPTER 8

MAP VIEW

Once a user has selected all of the mapping parameters and clicked on the "Submit Query" command key, the Map View Form (appendix H) will appear. This form allows the user to view the map and then click on the zoom-in, zoom-out, and pan radio buttons.

To zoom in means to enlarge and center the map at the point where the mouse is clicked. To zoom out means to shrink and center the map at the point where the mouse is clicked. To pan means to retain the size of the map but to center the map at the point where the mouse is clicked. The ability to zoom in, zoom out, and pan may be limited by the mapping extent. This is especially true for States bordering Canada, Mexico, and the Atlantic and Pacific Oceans. In this case the user may only be able to pan so far before reaching the end of the mapping extent.

If you are using Microsoft Explorer™ for the browser, you can save the map to a file by right clicking on the map image and following the instructions. The file will be saved as a jpeg file and can then be imported into other software such as Microsoft Word™ or Microsoft Powerpoint™.

CHAPTER 9

GENERATING A MAP FROM YOUR OWN DATA FILES

Sometimes you may want to generate a map without re-querying the FIADB database. Suppose you've already queried the database, manipulated the results of that query in a spreadsheet, and now would like to generate a map based on the results of the manipulation. Just go to the bottom of the Geographic Area of Interest Form and left click on the "I already have the data and want to create a map" command button. This will bring up the Create a Mapping File Form (appendix Q).

There are two steps on the Create a Mapping File Form: 1) choose a mapping layer and 2) enter mapping file data.

In step one the user specifies whether a shaded county map or a shaded congressional district map is to be created by highlighting either "County Code" or "Congressional District" in the selection box.

In step two the user must enter data into the textbox at the bottom of the Create a Mapping File Form.

If a shaded county map is to be generated, the first number in each row must be the State/county identifier (the first two digits are the State's FIPS code; digits 3 through 5 are the county's FIPS code). The second number in each row is the value that you want to map for that county. The columns can be either comma- or tab-delimited.

If a shaded congressional district map is to be generated, the first number in each row must be the State/congressional district identifier. The first two digits are the State's FIPS code; digits 3 and 4 are the Congressional District number; use "00" for the district number if it is an at-large district. The second number in each row is the value that you want to map for that congressional district. The columns can be either comma- or tab-delimited.

In some cases the results of two queries may be brought into a spreadsheet so that a more complicated map can be derived. For example, you could run a query to report the growing-stock volume by county and then run a second query to report the growing-stock removals by county. These two reports could be copied into a spreadsheet where the removals as a percent of standing volume could be calculated. You could then copy the two columns (1. State/county FIPS code, and 2. removals as a percent of standing volume) into the textbox at the bottom of the Create a Mapping File Form. A shaded county map of removals as a percent of standing volume could then be generated.

TUTORIALS

Tutorial 1—Area Table

Desired output: Shaded county map of Alabama (appendix H) showing the proportion of timberland to all land by county and a report of timberland area by county and stand-size class (appendix I).

Steps:

1. Start the program.
   a. Type http://www.ncrs.fs.fed.us/4801/fiadb/index.htm on the address line of your browser and press return.
   b. Click on the link to Run Forest Inventory Mapmaker Program

2. Select the geographic area of interest (Geographic Area of Interest Form).
   a. Make sure the "State/County" radio button is selected.
   b. Select "All Counties" for Alabama and the 1990 cycle.
   c. Go to the bottom of the form and click on the "Continue" command button.

3. Select the attribute of interest (Attribute of Interest Form)
   a. Highlight the "Area of timberland (area)" line in the attribute of interest listbox.
   b. Make sure that the "no" radio button is selected for the "Would you like to add an optional filter?"
   c. Go to the bottom of the form and click on the "Continue" command button.

4. Select the page, row, and column of interest (Page, Row, and Column of Interest Form)
   a. Highlight the "None" line in the page variable listbox (we do not want a three dimensional table; we only want two dimensions - columns and rows).
   b. Highlight the "County code" line in the row variable listbox (to generate a shaded county map, we must select "County code" as our row variable).
   c. Highlight the "Stand-size class" line in the column variable listbox.
   d. Set the "Would you like to eliminate empty pages/rows/columns?" radio buttons to "yes." (You might want to set these radio buttons to "no" if you plan to copy the report into a spreadsheet for further manipulation.)
   e. Go to the bottom of the form and click on the "Continue" command button.

5. Click on the "Continue" command button at the bottom of the Internet Address of Your Retrieval's Output Form. (You don't need to copy down any of the information on this form since you are not running a multi-State tree-level retrieval and there is no chance of your browser timing out.)

6. Click on the View table: 1. table www.ncrs.fs.fed.us/4801/fiadb/temp2/jdhhmmss31.htm link (Results Page Form) to view the area of timberland by county and stand-size class report (see report in appendix I).

7. Click on your browser's back arrow to return to the previous page (Results Page Form).

8. Click on the "Create Map" command button to bring up the Mapping Parameters Form.

9. Go to the bottom of the Mapping Parameters Form and click on the "Submit Query" command button. (We are going to use all of the default values on the Mapping Parameters Form for the initial look at our shaded county map.)

10. Look for the minimum value and maximum values on the Map View Form (appendix H). We will use these values when we go back to the Mapping Parameters Form to set the ranges (user-defined breakpoints) for the colors used on the shaded county map. In this tutorial the minimum value is 0.24 and the maximum value is 0.91 (the percentage of timberland in a county ranges from 24 to 91 for the 1990 inventory of Alabama).

11. Click on your browser's back arrow to return to the previous page (Mapping Parameters Form).

12. Go to "Step 3 Projection" and change the value in the dropdown box to "NAD_1927_Alabama_East [26729]."

13. Go to "Step 4. Class renderer (assigning map colors)" and change the value in the dropdown box to "User-defined 5 classes."

14. Go to "Step 4a. Setting breakpoints for user defined classes."
    a. In the class01 textbox enter: .01
    b. In the class02 textbox enter: .25
    c. In the class03 textbox enter: .50
    d. In the class04 textbox enter: .75
    e. In the class05 textbox enter: 1.00

15. Go to the bottom of the Mapping Parameters Form and click on the "Submit Query" command button.

16. Make sure the "Zoom in" radio button is selected on the Map View Form and click on the map. The resulting map should look like the map in appendix H.

Tutorial 2—Area Table Using Filters

Desired output: Shaded county map of Alabama (appendix J) showing the proportion of national forest timberland to all land by county and a report of national forest timberland area by county and stand-size class (appendix K). In this tutorial we will use the Ownership filter option to screen out all land that is not in national forest ownership.

Steps:

1. Repeat steps 1 through 3a of tutorial 1, or, if you just completed tutorial 1, use your browser's back arrow to return to the Attribute of Interest Form.

2. Make sure that the "yes" radio button is selected for the "Would you like to add an optional filter?"

3. Go to the bottom of the Attribute of Interest Form and click on the "Continue" command button.

4. Select the filtering option (Filtering Option for Attribute of Interest Form)
    a. Under Ownerships click on the "Specific Ownership Class by Ownership Group" radio button and then highlight "1 National Forest" in the ownership listbox.
    b. Go to the bottom of the form and click on the "Continue" command button.

5. Repeat steps 4 through 9 of tutorial 1 (the report for tutorial 2 is in appendix K instead of appendix I and the shaded county map is in appendix J instead of appendix H).

Tutorial 3—Volume Table Using Circular Retrieval

Desired output:

1 Shaded congressional district map showing the growing-stock volume of area within 100 miles of Evansville, Indiana.
2 Report of growing-stock volume by "Congressional District" and ownership group within this circle.
3 File suitable for loading into ArcView™ or other GIS software.

Steps:

1. Start the program.
    a. Type http://www.ncrs.fs.fed.us/4801/fiadb/index.htm on the address line of your browser and press return.
    b. Click on the link to Run Forest Inventory Mapmaker Program.

2. Select the geographic area of interest (Geographic Area of Interest Form)
    a. Click on the "U.S. Census Bureau Gazetteer" link and then type in Evansville, IN, in the appropriate textboxes. Copy the latitude and longitude in decimal degrees and use the browser's back arrow to return to the Geographic Area of Interest Form.
    b. Make sure the "Circle" radio button is selected.
    c. Enter 37.98415 in the latitude textbox and 87.54329 in the longitude textbox (the latitude and longitude for Evansville, IN) and 100 in the radius textbox.
    d. Select:
    "All Counties" for Illinois and the 1998 inventory cycle
    "All Counties" for Indiana and the 1998 inventory cycle
    "All Counties" for Kentucky and the 1988 inventory cycle
    "All Counties" for Tennessee and the 1989 inventory cycle
    e. Go to the bottom of the form and click on the "Continue" command button.

3. Select the attribute of interest (Attribute of Interest Form).
   a. Highlight the "Volume of growing stock on timberland (volume)" line in the attribute of interest listbox.
   b. Make sure that the "no" radio button is selected for the "Would you like to add an optional filter?"
   c. Go to the bottom of the form and click on the "Continue" command button.

4. Select the page, row, and column of interest (Page, Row, and Column of Interest Form).
   a. Highlight the "None" line in the page variable listbox (we do not want a three dimensional table; we only want two dimensions - columns and rows).
   b. Highlight the "Congressional District" line in the row variable listbox (to generate a shaded county map, we must select "Congressional District" as our row variable).
   c. Highlight the "Major species group" line in the column variable listbox.
   d. Set the "Would you like to eliminate empty pages/rows/columns?" radio buttons to "yes." (You might want to set these radio buttons to "no" if you plan to copy the report into a spreadsheet for further manipulation.)
   e. Go to the bottom of the form and click on the "Continue" command button.

5. Click on the "Continue" command button at the bottom of the Internet Address of Your Retrieval's Output Form. (There is no need to copy down any of the information on this form since this retrieval should take less than 2 minutes to run.)

6. Click on the View table: 1. table www.ncrs.fs.fed.us/4801/fiadb/temp2/jdhhmmss31.htm link (Results Page Form) to view the area of timberland by county and stand-size class report (see report in appendix M).

7. Click on your browser's back arrow to return to the previous page (Results Page Form).

8. Click on the "Create Map" command button to bring up the Mapping Parameters Form.

9. Go to the bottom of the Mapping Parameters Form and click on the "Submit Query" command button. (We are going to use all of the default values on the Mapping Parameters Form to create our shaded Congressional District map.)

10. Click on your browser's back arrow to return to the previous page (Mapping Parameters Form).

11. Click on your browser's back arrow to return to the previous page (Results Page Form).

12. **Note: This feature has been temporarily disabled. See comment in Chapter 5, page 11.** Click on the link—"Plot Coordinates: If you open this link to the Plot Coordinates you can save it as a file and then add the file as a table to an ESRI ArcView™ project"—to view a file containing all of the plot records that were selected by this retrieval (appendix O).

Tutorial 4—Shaded County Map Using Derived Data

Desired output: Shaded county map showing the percent change in timberland in Georgia between 1989 and 1998.

Steps:

1. Start the program.
   a. Type http://www.ncrs.fs.fed.us/4801/fiadb/index.htm on the address line of your browser and press return.
   b. Click on the link to Run Forest Inventory Mapmaker Program.

2. Select the geographic area of interest (Geographic Area of Interest Form).
   a. Make sure the "State/County" radio button is selected.
   b. Select "All Counties" for Georgia and the 1989 cycle.
   c. Go to the bottom of the form and click on the "Continue" command button.

3. Select the attribute of interest (Attribute of Interest Form)
   a. Highlight the "Area of timberland (area)" line in the attribute of interest listbox.
   b. Make sure that the "no" radio button is selected for the "Would you like to add an optional filter?"
   c. Go to the bottom of the form and click on the "Continue" command button.

4. Select the page, row, and column of interest (Page, Row, and Column of Interest Form).
   a. Highlight the "None" line in the page variable listbox.
   b. Highlight the "County code" line in the row variable listbox (to generate a shaded county map, we must select "County code" as our row variable).
   c. Highlight the "Stand-size class" line in the column variable listbox.
   d. Set the "Would you like to eliminate empty rows?" radio button to "no." (You will need to load data from the report into a spreadsheet for further manipulation.)
   e. Go to the bottom of the form and click on the "Continue" command button.

5. Click on the "Continue" command button at the bottom of the Internet Address of Your Retrieval's Output Form. (You don't need to copy down any of the information on this form since you are not running a multi-State tree-level retrieval and there is no chance of your browser timing out.)

6. Click on the View table: 1. table www.ncrs.fs.fed.us/4801/fiadb/temp2/jdhhmmss31.htm link (Results Page Form) to view the area of timberland by county and stand-size class report. Go to the bottom of this report to find a link to a comma-delimited file. Click on this link and then save this file as c:\tutorial_4_ga89.csv on your computer (you will be importing this file into a spreadsheet).

7. Repeat steps 1 through 6, but this time run the retrieval for the 1998 inventory of Georgia. Save this file as tutorial_4_ga98.csv.

8. Open file tutorial_4_ga89.csv from within a spreadsheet. In Microsoft Excel you would:
   a. open a blank Excel spreadsheet – FILE>>OPEN
   b. specify the file c:\tutorial_4_89.csv.

9. Delete the first 12 rows of the report, which is just header information.

10. Delete columns a, c, and e - retaining only the State/County FIPS code column and the total acres column for each county.

11. Repeat steps 8 through 10 for the file tutorial_4_ga98.csv.

12. Use the data in these two spreadsheets to estimate the percent change in timberland by county for the State of Georgia over the period 1989 to 1998. Subtract column 2 of tutorial_4_ga89.csv from column 2 of tutorial_4_ga98.csv and then divide by column 2 of tutorial_4_ga89.csv. Multiply the result by 100 to report in percent.

13. Copy column 1 of tutorial_4_ga89.csv (this is the column with the State/County FIPS codes) into column 1 of a new spreadsheet.

14. Copy the resulting column from step 12 (the percent change in area column) into column 2 of your new spreadsheet (if you are using Microsoft Excel, use "paste special">>"values" when you paste this column into the new spreadsheet). The new spreadsheet should look like appendix P.

15. Start the Forest Inventory Mapmaker program by typing http://www.ncrs.fs.fed.us/4801/fiadb/index.htm on the address line of your browser and press return. Click on the link to Run Forest Inventory Mapmaker Program.

16. Go to the bottom of the Geographic Area of Interest Form and click on the "I already have the data and want to generate a map" command button.

17. Copy columns 1 and 2 from your new spreadsheet into the textbox provided on the Create a Mapping File Form (appendix Q). Make sure there are no blank lines in this textbox. Scroll to the end of the data in this textbox. Chances are the cursor will be on an empty line. If so, use the backspace key so that your cursor is positioned immediately to the right of the last column of data on the last row.

18. Click on the "Continue" command button on the bottom of the Create a Mapping File Form.

19. Click on the "Create Map" command button on the bottom of the Results Page Form.

20. Go to the bottom of the Mapping Parameters Form and click on the "Submit Query" command button.

21. View the shaded county map on the Map View Form (appendix R).

LITERATURE CITED

Miles, Patrick D.; Brand, Gary J.; Alerich, Carol L.; Bednar, Larry F.; Woudenberg, Sharon W.; Glover, Joseph F.; Ezzell, Edward N. 2001. The forest inventory and analysis database: database description and users manual version 1.0. Gen. Tech. Rep. NC-218. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 130 p.

Bureau of the Census. 1989. Census of population and housing (1990). Tabulation and publication program. [Washington, DC]: U.S. Department of Commerce, Bureau of the Census. 51 p.

APPENDIX A

GEOGRAPHIC AREA OF INTEREST FORM

Forest Inventory Mapmaker

Version 1.0

Geographic Area of Interest (page 1 of 4)

SessionID=288642814

Retrieval Type

You may choose the way in which the FIA Retrieval System selects data from the database. The options are State/County or Circle. If you choose the circle option, you must enter the latitude and longitude of point center in decimal degrees (the latitude and longitude of Duluth, for example, are 46.78 decimal degrees north and 92.12 decimal degrees west) and enter the circle radius in miles. You may obtain the latitude and longitude of a particular county, city, or zip code through the **U.S. Census Bureau Gazetteer**.

- ◉ State/County
- ○ Circle (also produces link to plot file on page 4 of 4 for uploading (using ADD TABLE) into ArcView™
  - Latitude: [ ] Decimal Degrees North
  - Longitude: [ ] Decimal Degrees West
  - Radius: [ ] Miles

In this section you will choose the State and counties to be included in the database retrieval. For each State, select one of the following options: (1) "No Selection" (the default mode), (2) "All Counties" (includes all counties), or (3) "Specific Counties" includes only the counties of interest. If you've chosen a circle retrieval, then the FIA Retrieval System will use only the States/counties or partial States/counties that are within the circle radius. If you're not certain which States will be included in the circle radius and you want to include all the area within the circle, choose enough surrounding States to make certain the entire area of the circle will be represented from the database. (Note: The method of choosing multiple items in a select list, such as holding down the CTRL key as you click on your choices, will vary depending on your Web browser. You may also be able to deselect an item by holding down the CTRL key and clicking on the item.)

State and County Selection Table

Alabama 1990 cycle 1	**Arizona** 1985 cycle 1	**Arkansas** 1995 cycle 1
◉ No Selection	◉ No Selection	◉ No Selection
○ All Counties	○ All Counties	○ All Counties
○ Specific Counties (You must choose one or more of the following counties)	○ Specific Counties (You must choose one or more of the following counties)	○ Specific Counties (You must choose one or more of the following counties)
01001 Autauga 01003 Baldwin 01005 Barbour 01007 Bibb 01009 Blount	04001 Apache 04003 Cochise 04005 Coconino 04007 Gila 04009 Graham	05001 ARKANSAS 05003 ASHLEY 05005 BAXTER 05007 BENTON 05009 BOONE
	(Note: All 48 contiguous States are in this table)	

Continue

I already have the data and want to create a map.

APPENDIX B

ATTRIBUTE OF INTEREST FORM

Forest Inventory Mapmaker

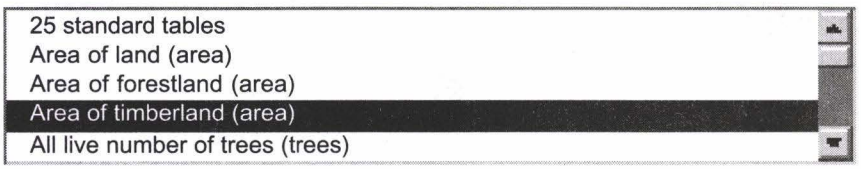
Version 1.0

Attribute of Interest (page 2 of 4)

SessionID=585326311

Attribute of Interest (choose one)

Note on retrieval times: The amount of time it takes to complete a retrieval is determined primarily by the size of the geographic area in question and the type of attribute being reported. Area retrievals for a heavily forested State like Minnesota should take 10 seconds or less, while numbers of trees, volumes, growth, removals, mortality, and biomass should take from 1 to 2 minutes. Retrieving the "25 standard tables" for a large State may take as long as 20 minutes. In general the "25 standard tables" option should only be run for areas smaller than a State.



Would you like to add an optional filter?

- ◻ yes
- ◉ no

Continue

APPENDIX C

PAGE, ROW, AND COLUMN CLASSIFICATION FORM

Forest Inventory Mapmaker

Version 1.0

Page,Row and Column of Interest (page 3 of 4)

SessionID=585326311

Page variable

- None
- All live stocking
- Aspect
- Condition number
- Condition proportion

Row variable (Select "County Code" or "Congressional District" to generate a map)

- Aspect
- Condition number
- Condition proportion
- Congressional District
- County code

Column variable

- Stand origin
- Stand treatment 1
- Stand treatment 2
- Stand treatment 3
- Stand-size class

Would you like to eliminate empty pages?

- (•) yes
- ( ) no

Would you like to eliminate empty rows?

- (•) yes
- ( ) no

Would you like to eliminate empty columns?

- (•) yes
- ( ) no

Continue

APPENDIX D

INTERNET ADDRESS OF YOUR RETRIEVAL'S OUTPUT FORM

Forest Inventory Mapmaker

Version 1.0

Internet address of your retrieval's output

SessionID=288642814

If this retrieval takes more than 5 minutes your browser may time out. Even though your browser has timed out your retrieval will continue to run. The table generated by your retrieval can be viewed at a later time by typing the following information on your browser address line: http://www.ncrs.fs.fed.us/4801/fiadb/temp2/jdhhmmss31.htm

You can generate a map based on your retrieval by typing the following information on your browser address line: http://www.ncrs.fs.fed.us/scripts/esrimap.dll?name=forest_inventory_mapmaker&cmd=map&datestamp=jdhhmmss&

Continue

APPENDIX E

RESULTS PAGE FORM

Forest Inventory Mapmaker

Version 1.0

Results page (page 4 of 4)

Geographic area of interest is Alabama 1990 cycle 1.

The attribute of interest is Area of timberland (area).

No filters were used.

Pages are None.

Rows are County code.

Columns are Stand-size class.

The data in these tables are derived by sampling and are subject to statistical error. It is highly advised that users derive confidence intervals for the point estimates reported in these tables to judge the suitability of particular subsets of data for their particular applications.

The database includes information that may have been collected in a slightly different way from one State to another. When information is collected that crosses State boundaries, the user may want to check with respective FIA units for possible differences.

View table: 1. table www.ncrs.fs.fed.us/4801/fiadb/temp2/jdhhmmss31.htm

Create Map

APPENDIX F

FILTERING OPTION FOR ATTRIBUTE OF INTEREST FORM

Forest Inventory Mapmaker Version

1.0

Filtering Option for attribute of interest (page 2 of 4 continued)

SessionID=585326284

There are seven plot/condition filters. These filters can be used to limit the retrieval to the data of interest. For each filter the user may choose either (1) to accept the default mode (which does not filter out any data from the retrieval), or (2) to select a filtering option that will exclude all data except those that match the specific requirements. (To select more than one item in a listbox use the control key while clicking with your mouse. The control key can also be used to deselect an item from a listbox.)

Ownership

- ◉ All Ownership classes
- ○ Specific Ownership class by Ownership Group (You must select one or more of the following ownership groups.)

1 National Forest
2 Other federal
3 State and local government
4 Private

- ○ Specific Ownership class by Ownership Class (You must choose one or more combinations of ownership classes.)

11 National Forest
12 National Grassland
21 National Park Service
22 Bureau of Land Management
23 Fish and Wildlife Service
24 Dept of Defense/Energy

- ○ National Forest System Land by Administrative Forest (You must choose one or more combinations of administrative forest.) This option will select only National Forest System land. You must select the State(s) on the georaphic area of interest form where the administrative forest data are being collected. The first digit of the three-digit code before the national forest name identifies the region code (Note: Region 10 - Alaska is denoted by 0) while the second and third digits identify the national forest code.

102 Beaverhead
103 Bitterroot
104 Idaho Panhandle
105 Clearwater
108 Custer
109 Deerlodge

Stand Age

- ◉ All Stand Ages
- ○ Specific Stand Age (You must enter the minimum and maximum stand age range.)

Minimum Age [ ] Maximum Age [ ]

Slope

◉ All Slopes

○ Specific Slopes (You must enter the minimum and maximum slope range in percent (0% to 200%).

Minimum Slope [ ] Maximum Slope [ ]

Forest Type Group

◉ All Forest Types

○ Specific Forest Type Group (You must choose one or more combinations of forest type groups.)

100 White / Red / Jack Pine Group
101 Jack pine
102 Red pine
103 Eastern white pine
104 White pine / hemlock

Stand Origin

◉ All Stand Origins

○ Specific Stand Origin (You must select one of the following stand origins.)
Stand origin is unknown and a specific stand origin may not be selected with the following States:
(AZ,CO,ID,MT,NM,NV,UT,WY)

0 Natural
1 Artificial

Site Class

◉ All Site Classes

○ Specific Site Class (You must choose one or more combinations of site class.)

1 Over 225 cubic ft./acre/year
2 165 - 224 cubic ft./acre/year
3 120 - 164 cubic ft./acre/year
4 85 - 119 cubic ft./acre/year
5 50 - 84 cubic ft./acre/year
6 20 - 49 cubic ft./acre/year

Physiographic Class

◉ All Physiographic Classes

○ Specific Physiographic Class (You must choose one or more combinations of physiographic classes.)

Physiographic class is unknown and a specific physiographic class may not be selected with the following States:
(AZ,CO,ID,MT,NM,NV,UT,WY)

11 Xeric - dry tops
12 Xeric - dry slopes
13 Xeric - deep sands
14 Xeric - other
21 Mesic - flatwoods

User-defined Filter

An expert user may filter the retrieval by specifying additional SQL where clauses in the textboxes provided below.

Examples:

To limit a volume retrieval to red maple, use the following where clause:

and t.spcd=316

To limit the volume retrieval to red maple on national forest land, use the following where clause:

and t.spcd=316 and c.owncd=11

To limit the volume retrieval to red maple and silver maple on national forest land, use the following where clause:

and (t.spcd=316 or t.spcd=317) and p.owncd=11

To limit the area retrieval to NORTHWOODS COUNTY, use the following where clause:

and (pe.northwoods=1)

Text area to input additional SQL where clause: (experts only please - syntax must be exact)

Continue

APPENDIX G

MAPPING PARAMETERS FORM

Forest Inventory Mapmaker

Version 1.0

Mapping Parameters

Step 1. Do you want to display a legend?

- ☐ No
- ☐ Upper right
- ☐ Upper left
- ☐ Lower right
- ☑ Lower left

Legend title [ ]

Step 2. Do you want to display County code names on the map?

- ☑ Yes
- ☐ No

Default label size

Step 3. Projection

Decimal degrees [00000]

Step 4. Class renderer (assigning map colors)

Equivalent 5 classes

Step 4a. Setting breakpoints for user-defined classes.

If, in the listbox for step 4, you selected to define your classes, you must fill in the appropriate range boxes below. (Class 1 should have the smallest value.)

Class 01: less than [ ] White

Class 02: less than [ ] Yellow

Class 03: less than [ ] Light green

Class 04: less than [ ] Green

Class 05: less than [ ] Cyan

Class 06: less than [ ] Light blue

Class 07: less than [ ] Blue

Class 08: less than [ ] Light red

Class 09: less than [ ] Red

Class 10: less than [ ] Black

Step 5. Units to be mapped.

- (•) Units per area of all land.
  (Divide value for each County code by total land area in the County code.

  If the values are in acres, the mapped result will be a proportion of the total land area (a number from 0 to 1.0; multiply by 100 to get percent).

  If the values are volumes or weights, the result will be volume per area or weight per area.)

- ( ) Units
  (Total units found in the County code in acres, cuft, bdft, etc.)

Step 6. Map title.

Step 7. Zoom in factor to use during map viewing

2X Zoom IN Factor

Submit Query

APPENDIX H

MAP VIEW FORM FOR TUTORIAL 1

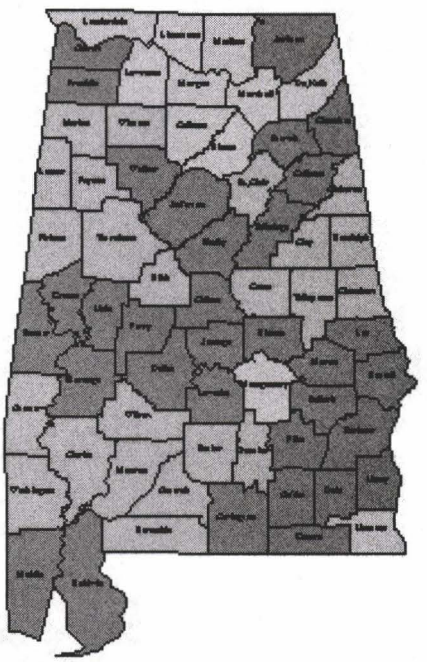
Forest Inventory Mapmaker

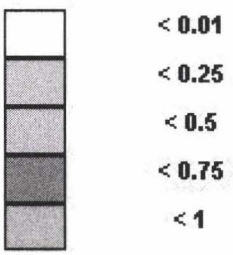
Version 1.0

Mininum value = .24 Maximum value = .91

Area of timberland (acres) divided by the total area of land in each County code (acres).

On Click ◉ Zoom In ○ Zoom Out ○ Pan





map: Projection=Decimal degrees

View table: http://www.ncrs.fs.fed.us/4801/fiadb/temp2/jdhhmmss31.htm

APPENDIX I

TABLE OUTPUT FROM TUTORIAL 1

Forest Inventory Mapmaker

Version 1.0

Geographic area of interest is Alabama 1990 cycle 1.

The attribute of interest is Area of timberland (area).

Filters: No filters were used.

Pages are None.

Rows are County code.

Columns are Stand-size class.

1. table

Two-way table (rows and columns)

	TotalStand-size class	Large diameter	Medium diameter	Small diameter	Nonstocked
01001 Autauga	283,050	73,593	39,627	164,169	5,661
01003 Baldwin	662,028	220,676	169,356	266,864	5,132
01005 Barbour	409,446	189,888	94,944	124,614	0

01007 Bibb	345,894	107,508	108,476	129,910	0
01009 Blount	197,200	81,200	46,400	69,600	0
01011 Bullock	290,836	106,267	67,116	117,453	0
01013 Butler	389,340	127,926	111,240	150,174	0
01015 Calhoun	252,357	96,094	78,107	78,156	0
01017 Chambers	316,008	84,645	84,645	146,718	0
01019 Cherokee	206,748	45,944	74,659	86,145	0
01021 Chilton	329,380	89,752	97,376	142,252	0
01023 Choctaw	508,640	219,640	127,160	161,840	0
01025 Clarke	723,520	353,600	163,200	206,720	0
01027 Clay	303,666	59,040	108,324	136,302	0
01029 Cleburne	295,758	144,369	72,839	78,550	0
01031 Coffee	262,416	68,728	56,232	137,456	0
01033 Colbert	209,235	69,745	91,205	48,285	0
01035 Conecuh	458,508	108,594	120,660	229,254	0
01037 Coosa	349,408	45,824	137,472	160,384	5,728

01039 Covington	473,688	121,019	155,196	197,473	0
01041 Crenshaw	304,668	95,914	84,630	124,124	0
01043 Cullman	200,540	97,560	27,100	75,880	0
01045 Dale	224,406	86,310	86,310	51,786	0
01047 Dallas	354,348	137,593	130,053	86,702	0
01049 De Kalb	221,223	65,769	77,727	77,727	0
01051 Elmore	245,868	70,248	58,540	117,080	0
01053 Escambia	471,962	198,758	114,080	159,124	0
01055 Etowah	188,100	91,200	39,900	57,000	0
01057 Fayette	337,920	92,160	92,160	153,600	0
01059 Franklin	262,099	65,139	78,784	118,176	0
01061 Geneva	206,820	74,685	17,235	109,155	5,745
01063 Greene	274,151	134,159	46,664	93,328	0
01065 Hale	252,414	101,469	59,139	91,806	0
01067 Henry	206,010	44,145	73,575	88,290	0
01069 Houston	125,138	43,317	38,504	43,317	0

01071 Jackson	430,482	182,127	160,051	88,304	0
01073 Jefferson	412,650	115,542	121,044	176,064	0
01075 Lamar	325,950	97,785	117,342	110,823	0
01077 Lauderdale	164,850	59,346	59,346	46,158	0
01079 Lawrence	194,793	89,349	63,228	42,216	0
01081 Lee	256,025	62,700	62,700	130,625	0
01083 Limestone	89,982	59,988	9,998	19,996	0
01085 Lowndes	258,900	98,382	46,602	113,916	0
01087 Macon	288,849	99,435	78,978	110,436	0
01089 Madison	187,264	110,656	68,096	8,512	0
01091 Marengo	402,402	176,813	60,970	164,619	0
01093 Marion	373,686	85,764	128,646	159,276	0
01095 Marshall	173,755	72,865	61,655	39,235	0
01097 Mobile	499,038	134,150	96,588	257,568	10,732
01099 Monroe	527,321	229,724	83,536	214,061	0
01101 Montgomery	211,418	119,994	45,712	45,712	0

01103 Morgan	171,394	80,656	70,574	20,164	0
01105 Perry	324,256	85,890	105,316	133,050	0
01107 Pickens	464,125	229,125	111,625	123,375	0
01109 Pike	293,559	65,901	89,865	137,793	0
01111 Randolph	286,052	44,008	99,018	143,026	0
01113 Russell	283,955	52,155	75,335	156,465	0
01115 St. Clair	317,688	88,536	93,744	135,408	0
01117 Shelby	363,240	115,026	115,026	133,188	0
01119 Sumter	401,536	156,850	100,384	144,302	0
01121 Talledega	275,013	108,961	46,479	119,573	0
01123 Tallapoosa	378,560	75,712	122,304	180,544	0
01125 Tuscaloosa	659,120	271,786	165,892	221,442	0
01127 Walker	369,740	121,625	77,840	165,410	4,865
01129 Washington	634,236	254,938	167,886	205,194	6,218
01131 Wilcox	441,518	160,552	86,010	194,956	0
01133 Winston	327,776	120,592	91,996	115,188	0
Total County code	21,931,926	7,639,411	5,912,421	8,336,013	44,081

View comma-delimited table: 1. table
www.ncrs.fs.fed.us/4801/fiadb/temp2/
jdhhmmss11.htm

APPENDIX J

MAP VIEW FORM FOR TUTORIAL 2

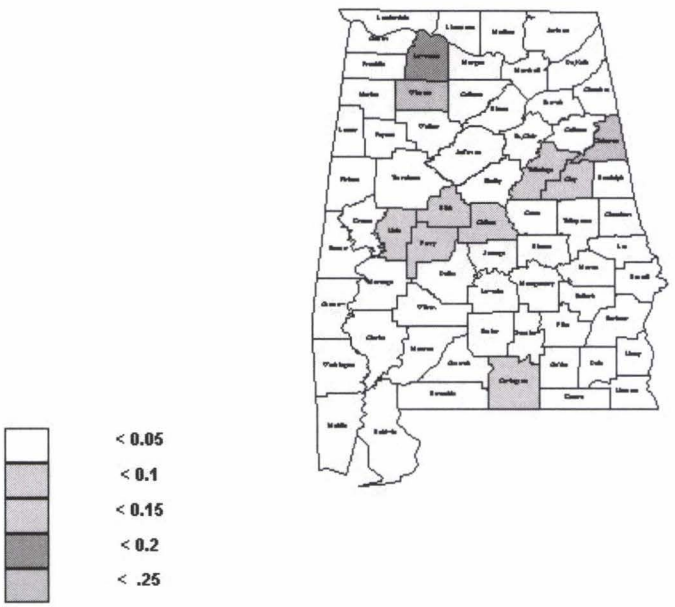
Forest Inventory Mapmaker

Version 1.0

Mininum value = 0 Maximum value = .25

Area of timberland (acres) divided by the total area of land in each County code (acres).

On Click ◉ Zoom In ◻ Zoom Out ◻ Pan



map: Projection=Decimal degrees

View table: http://www.ncrs.fs.fed.us/4801/fiadb/temp2/j715005431.htm

APPENDIX K

TABLE OUTPUT FOR TUTORIAL 2

Forest Inventory Mapmaker

Version 1.0

Geographic area of interest is Alabama 1990 cycle 1.

The attribute of interest is Area of timberland (area).

Filters: ownership group includes (National Forest).

Pages are None.

Rows are County code.

Columns are Stand-size class.

1. table

Two-way table (rows and columns)

	TotalStand-size class	Large diameter	Medium diameter	Small diameter
01007 Bibb	61,398	36,384	13,644	11,370
01015 Calhoun	17,889	11,926	5,963	0
01021 Chilton	25,080	16,720	0	8,360
01027 Clay	51,770	20,708	20,708	10,354
01029 Cleburne	90,162	70,126	10,018	10,018

01039 Covington	53,886	35,924	7,698	10,264
01047 Dallas	1,347	1,347	0	0
01053 Escambia	27,050	16,230	0	10,820
01059 Franklin	1,127	1,127	0	0
01065 Hale	26,430	23,787	2,643	0
01079 Lawrence	72,870	41,640	20,820	10,410
01087 Macon	9,669	4,395	1,758	3,516
01105 Perry	29,913	13,806	9,204	6,903
01121 Talledega	50,510	20,204	15,153	15,153
01125 Tuscaloosa	6,150	4,920	1,230	0
01133 Winston	80,168	61,948	7,288	10,932
Total County code	605,419	381,192	116,127	108,100

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View comma-delimited table: 1. table
www.ncrs.fs.fed.us/4801/fiadb/temp2/
j715005411.htm

APPENDIX L

MAP VIEW FORM FOR TUTORIAL 3

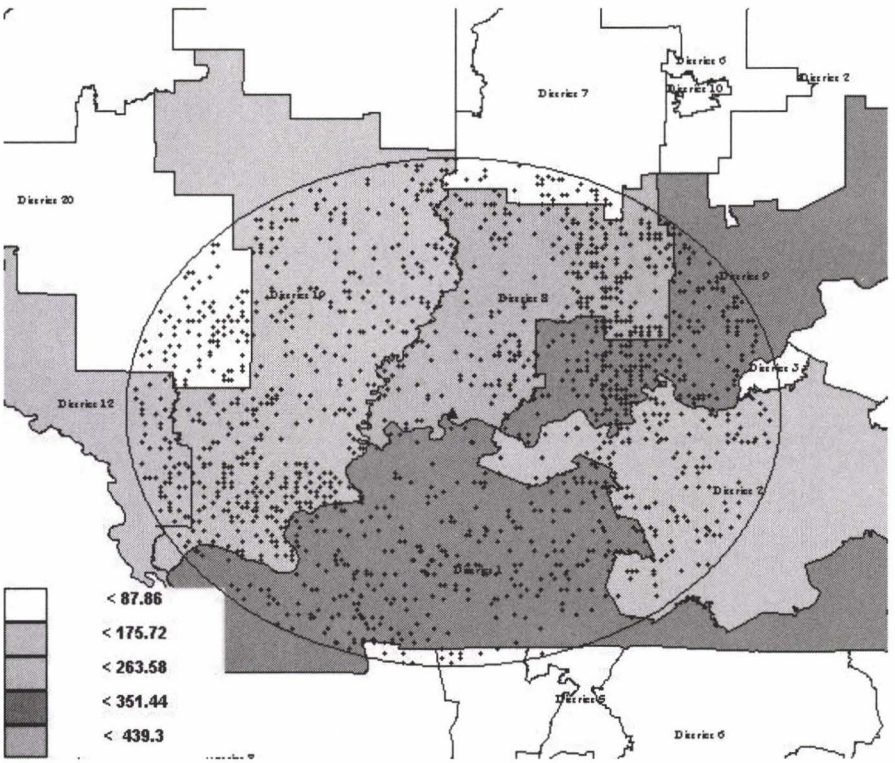
Forest Inventory Mapmaker

Version 1.0

Mininum value = 0 Maximum value = 439.3

Volume of growing stock on timberland (cuft) divided by the total area of land in each Congressional District (acres).

On Click ◉ Zoom In ◻ Zoom Out ◻ Pan



map: Projection=Decimal degrees

View table: http://www.ncrs.fs.fed.us/4801/fiadb/temp2/j811485731.htm

APPENDIX M

TABLE OUTPUT FOR TUTORIAL 3

Forest Inventory Mapmaker

Version 1.0

Geographic area of interest is Illinois 1998 cycle 4, Indiana 1998 cycle 4, Kentucky 1988 cycle 1, Tennessee 1989 cycle 1.

The attribute of interest is Volume of growing stock on timberland (cuft).

No filters were used.

Pages are None.

Rows are Congressional District.

Columns are Major species group.

Circle retrieval with latitude of 37.98415 degrees north and longitude of 87.54329 degrees west and radius of 100 miles.

1. table

Two-way table (rows and columns)

	TotalMajor species group	Softwoods	Hardwoods
1712 District 12 ILLINOIS(Jerry F. Costello)	237,104,351	11,207,972	225,896,380
1719 District 19 ILLINOIS(David D. Phelps)	1,604,617,275	70,760,983	1,533,856,291
1720 District 20 ILLINOIS(John Shimkus)	278,214,570	2,383,414	275,831,156

1807 District 7 INDIANA(Brian D. Kerns)	198,561,996	3,472,010	195,089,987
1808 District 8 INDIANA(John N. Hostettler)	1,469,518,579	73,265,465	1,396,253,113
1809 District 9 INDIANA(Baron P. Hill)	1,291,717,214	108,547,462	1,183,169,752
2101 District 1 KENTUCKY(Ed Whitfield)	2,308,810,668	90,334,418	2,218,476,250
2102 District 2 KENTUCKY(Ron Lewis)	1,190,049,959	77,982,204	1,112,067,755
4705 District 5 TENNESSEE(Bob Clement)	13,373,274	0	13,373,274
4707 District 7 TENNESSEE(Ed Bryant)	49,458,454	5,511,407	43,947,047
4708 District 8 TENNESSEE(John S. Tanner)	53,869,237	5,763,068	48,106,169
Total Congressional District	8,695,295,576	449,228,402	8,246,067,174

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View comma-delimited table: 1. table
www.ncrs.fs.fed.us/4801/fiadb/temp2/
j811400011.htm

APPENDIX N

RESULTS PAGE FORM FROM TUTORIAL 3 CIRCLE RETRIEVAL

Forest Inventory Mapmaker

Version 1.0

Results page (page 4 of 4)

Geographic area of interest is Illinois 1998 cycle 4, Indiana 1998 cycle 4, Kentucky 1988 cycle 1, Tennessee 1989 cycle 1.

The attribute of interest is Volume of growing stock on timberland (volume).

No filters were used.

Pages are None.

Rows are Congressional District.

Columns are Major species group.

Circle retrieval with latitude of 37.98415 degrees north and longitude of 87.54329 degrees west and radius of 100 miles.

This is the function used to calculate surface distance.

Plot Coordinates

If you open this link to the Plot Coordinates, you can save it as a file and then add the file as a table to an ESRI ArcView™ project.

The data in these tables are derived by sampling and are subject to statistical error. It is highly advised that users derive confidence intervals for the point estimates reported in these tables to judge the suitability of particular subsets of data for their particular applications.

The database includes information that may have been collected in a slightly different way from one State to another. When information is collected that crosses State boundaries, the user may want to check with respective FIA units for possible differences.

View table: 1. table www.ncrs.fs.fed.us/4801/fiadb/temp2/j811485731.htm

Create Map

APPENDIX O

PLOT COORDINATES FROM TUTORIAL 3 CIRCLE RETRIEVAL

"Plot_number","Longitude","Latitude","Value","Per_plot_value"
47125000511 ,-87.56 , 36.56 , 3205762.415619 , 515.313039
47161000201 ,-87.78 , 36.56 , 8184412.613316 , 1304.081041
47161000231 ,-87.83 , 36.56 , 15817961.92884 , 2520.38909
47125000481 ,-87.5 , 36.58 , 8444578.786006 , 1357.431086
47125000591 ,-87.61 , 36.58 , 5036687.57628 , 809.62668
47147000401 ,-87.03 , 36.61 , 13373273.52375 , 1765.44865
47125000351 ,-87.39 , 36.61 , 12301402.899158 , 1977.399598
47125000491 ,-87.5 , 36.61 , 8672836.968324 , 1394.122644
47125000501 ,-87.56 , 36.61 , 184034.611242 , 29.582802
47161000221 ,-87.83 , 36.61 , 990625.61772 , 157.84347

Plot number is an 11-digit combination of keyfields from the FIADB COND record. For the first record the plot number is 47125000511. Digits 1 and 2 are the two-digit State code (47=Tennessee), digits 3 through 5 are the FIPS county code (125=Montgomery), digits 6 through 10 are the plot number (00051=51), and digit 11 is the condition number (1=1).

Longitude is in decimal degrees.

Latitude is in decimal degrees.

Value is the value of the plot when expanded to the population (the per acre value multiplied by the plot expansion factor).

Per_plot_value is the per acre value.

APPENDIX P

SPREADSHEET OF DERIVED DATA TO BE USED IN TUTORIAL 4

The first column is the State/County FIPS codes.

The second column contains the percent change in timberland area for that county between 1989 and 1998.

13001	5.5315
13003	12.8199
13005	-2.1367
13007	6.625
13009	0.0485
13011	-0.5467
13013	-7.2125
13015	-3.753
13017	6.6919
13019	9.1847
13021	-4.073
13023	7.6334
13025	-2.2792
13027	26.4473
13029	-5.4241
13031	14.6327
13033	15.3742
13035	-5.9164
13037	0.1229
13039	-10.1419
13043	5.7503
13045	-0.3509
13047	-2.6054
13049	-3.3056
13051	-6.9068
13053	6.545
13055	7.8765
13057	-7.8345

(continued on next column)

13059	-2.1885
13061	-2.5879
13063	-28.7465
13065	2.0529
13067	-44.8615
13069	3.406
13071	22.4939
13073	-14.0532
13075	25.0022
13077	-3.5318
13079	0.4352
13081	2.8958
13083	-6.6554
13085	-9.184
13087	2.1502
13089	-38.3716
13091	-0.6675
13093	9.4705
13095	11.8417
13097	-7.9045
13099	-8.2818
13101	-3.6998
13103	-3.7447
13105	8.4099
13107	2.1477
13109	2.918
13111	-7.3089
13113	-11.3032
13115	6.4439
13117	-7.6575
13119	6.2877
13121	-9.6452
13123	-2.7817
13125	2.3934

(continued on next page)

13127	-6.7674
13129	-4.2782
13131	13.5425
13133	-1.8399
13135	-20.1705
13137	0.8082
13139	-1.7449
13141	1.7367
13143	-7.212
13145	-1.5872
13147	21.3311
13149	-2.3347
13151	-8.4455
13153	-4.0291
13155	16.3754
13157	0.6212
13159	2.0676
13161	10.553
13163	0.5916
13165	8.9777
13167	22.9968
13169	3.1126
13171	-6.6483
13173	12.0094
13175	-3.1881
13177	3.7386
13179	-3.4358
13181	-0.1746
13183	-0.3306
13185	5.0845
13187	-11.77
13189	0.524
13191	-7.7054
13193	12.4903
13195	10.4745

(continued on next column)

13197	-1.4685
13199	-0.3639
13201	0.5999
13205	7.0097
13207	-7.3296
13209	14.0571
13211	-4.7041
13213	-4.4761
13215	-3.3754
13217	-5.4091
13219	-6.8453
13221	5.0377
13223	-13.1778
13225	13.1239
13227	-2.5615
13229	-4.8436
13231	-6.7528
13233	-1.4504
13235	5.2558
13237	7.0617
13239	-8.5197
13241	-2.9915
13243	0.6475
13245	0.3711
13247	-7.1525
13249	4.8733
13251	-2.5806
13253	5.9766
13255	-1.5074
13257	3.4487
13259	0.7163
13261	26.3739
13263	2.0074
13265	0.5651
13267	1.5414

(continued on next page)

13269	1.2855
13271	6.4315
13273	14.652
13275	4.6423
13277	3.9783
13279	4.2269
13281	-9.9607
13283	12.5709
13285	-7.1449
13287	8.1651
13289	-0.9583
13291	-10.336
13293	-2.6237
13295	4.2465
13297	-0.2455
13299	0.6367
13301	25.8176
13303	2.8716
13305	-3.3624
13307	2.1533
13309	6.5521
13311	-13.6602
13313	3.3889
13315	3.8219
13317	0.8072
13319	2.0211
13321	17.4559

APPENDIX 9

CREATE A MAPPING FILE FORM FOR TUTORIAL 4 WITH DATA ENTERED IN THE DATA TEXTBOX

Forest Inventory Mapmaker

Version 1.0

Create a mapping file.

SessionID=585326304

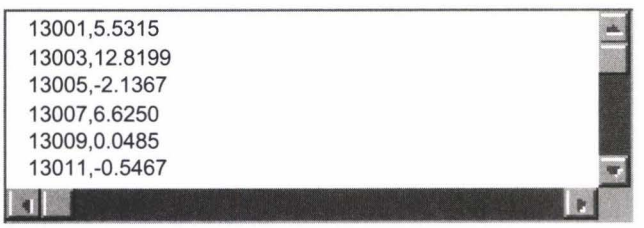
Step 1. Choose a mapping layer

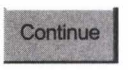
County code
Congressional District

Step 2. Mapping file data

County	Congressional District
The file should look like this if the layer is County codes(The first number in each row is the code to identify the county. The first two digits are the State's FIPS code, digits 3 through 5 are the County's FIPS code. The second number in each row is the value that you want to map for that county.):	**The file should look like this if the layer is Congressional Districts(The first number in each row is the code to identify the Congressional District. The first two digits are the State's FIPS code, digits 3 and 4 are the Congressional District number - use "00" for the district number if it is an at large district. The second number in each row is the value that you want to map for that Congressional District.):**
18001, 50 18003, 40 18005, 20 18007, 35 18009, 25	1801, 50 1802, 40 1803, 30 1804, 35 1805, 25

Put your mapping data in this textbox and click on the Continue button. (Note: the file can either be comma- or tab-delimited.)





APPENDIX R

TUTORIAL 4 MAP OF PERCENT CHANGE IN AREA OF TIMBERLAND BY COUNTY FOR GEORGIA, 1989-1998

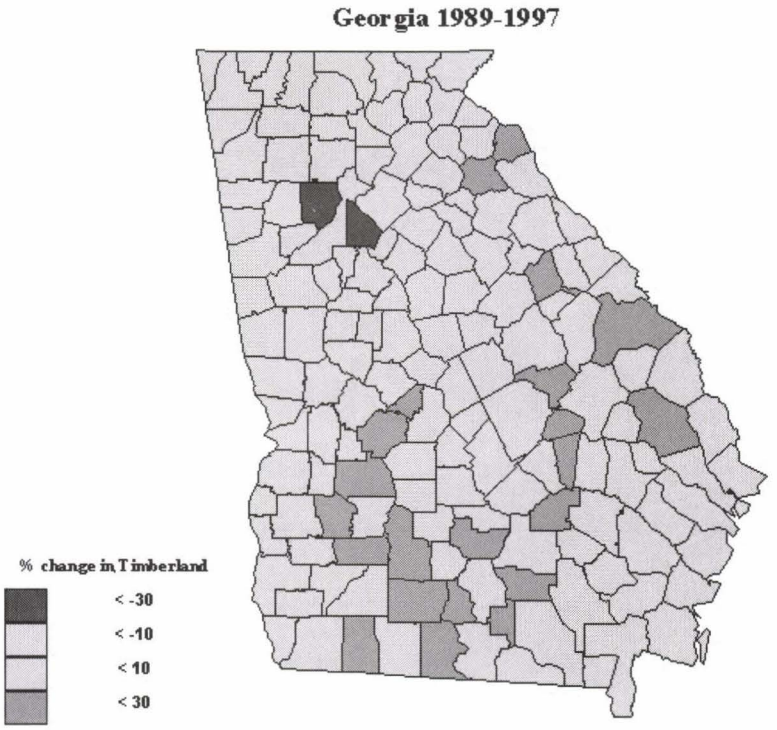
Forest Inventory Mapmaker

Version 1.0

Mininum value = -44.8615 Maximum value = 26.4473

User-generated map

On Click Zoom In Zoom Out Pan



map: Projection=NAD_1927_Georgia_West

*U.S. Government Printing Office: 2001 - 756-078/40019

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Miles, Patrick D.
2001. **Forest Inventory Mapmaker Users Guide**. Gen. Tech. Rep. NC-221. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 52 p.

The Forest Inventory Mapmaker Web application provides users with the ability to easily generate tables and shaded maps. The goal of this manual is to present the basic concepts of the Web application to the user and to reinforce these concepts through the use of tutorials.

KEY WORDS: Forest inventory, data management, information management systems, plot measurements.

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Our job at the North Central Research Station is discovering and creating new knowledge and technology in the field of natural resources and conveying this information to the people who can use it. As a new generation of forests emerges in our region, managers are confronted with two unique challenges: (1) Dealing with the great diversity in composition, quality, and ownership of the forests, and (2) Reconciling the conflicting demands of the people who use them. Helping the forest manager meet these challenges while protecting the environment is what research at North Central is all about.